

**COSMETIC CONTAINER, COSMETIC APPLICATOR,
AND METHODS OF MAKING THE SAME****CROSS-REFERENCE TO RELATED APPLICATION**

5 The benefit under 35 U.S.C. §119(e) of U.S. Provisional Patent Application Serial No. 60/427,697 filed November 20, 2002, is hereby claimed.

BACKGROUND**Field of the invention**

10 The invention generally relates to cosmetic applicators for containing a cosmetic mass to be applied. More particularly, the invention relates to such cosmetic applicators that include collapsible reservoirs.

Brief Description of Related Technology

15 Cosmetic applicators take various forms, including brushes, sponges, puffs, swabs, and, in the case of a lipstick or pencil product, a shaped cosmetic mass itself serves as an applicator. Frequently, the cosmetic mass, such as eyeshadow, has been loaded onto the applicator for use by dipping the applicator into the cosmetic mass held in a container or swabbing the cosmetic mass onto the applicator. In one type of cosmetic applicator, a cosmetic mass is forced through one or more holes in an applicator head by use of a plunger disposed in a rigid cylindrical container holding 20 the cosmetic mass. Various applicator heads include one or more features, such as brushes, flocking, and the like.

SUMMARY

25 One aspect of the disclosure provides a cosmetic container for holding a cosmetic mass and connecting to an applicator head, the container including a collapsible reservoir, sealed at one end, and a tubular neck joined to the reservoir, the neck including a coupler, and the interior of the neck communicating with the interior of the reservoir.

30 Another aspect of the disclosure provides a cosmetic applicator for holding and applying a cosmetic mass, the applicator including a collapsible reservoir sealed at one end and an applicator head joined to the reservoir, a tip portion of the

applicator head including one or more discharge openings, and the interior of the applicator head communicating with the interior of the reservoir.

Another aspect of the disclosure provides a method of making a cosmetic applicator, including the steps of bonding a pliable-walled reservoir to a neck, the inner wall of the neck including an inner coupler and the outer wall of the neck including an outer coupler; inserting an applicator head into the neck, the outer wall of the applicator head including an outer coupler; supporting the neck against deformation while engaging the inner and outer couplers to connect the applicator head to the neck; loading a cosmetic mass into the pliable-walled reservoir; and sealing the pliable-walled reservoir.

Further aspects and advantages may become apparent to those skilled in the art from a review of the following detailed description, taken in conjunction with the appended claims. While the invention is susceptible of embodiments in various forms, described hereinafter are specific embodiments with the understanding that the disclosure is illustrative, and is not intended to limit the invention to the specific embodiments described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows an embodiment of a cosmetic applicator according to the invention, the applicator including a cosmetic container, an applicator head, and a cap.

Figure 2 is a partial cross-sectional view of the applicator of Figure 1.

Figure 3 is a partial exploded view of the applicator of Figure 1.

DETAILED DESCRIPTION

A cosmetic container for holding a cosmetic mass and connecting to an applicator head, a cosmetic applicator for holding and applying a cosmetic mass, and methods of making such containers and applicators, are disclosed herein.

One aspect of the disclosure is a cosmetic container for holding a cosmetic mass and connecting to an applicator head, the container including a collapsible reservoir including a generally cylindrical wall, preferably of uniform

thickness, sealed at one end and a tubular neck joined to the reservoir, the neck including a coupler, and the interior of the neck communicating with the interior of the reservoir. Preferably, the container further includes a tubular applicator head removably coupled to the neck.

5 Another aspect of the disclosure is a cosmetic applicator for holding and applying a cosmetic mass, the applicator including a collapsible reservoir including a generally tubular wall sealed at one end and a tubular applicator head joined to the reservoir, a tip portion of the applicator head including one or more discharge openings, the interior of the applicator head communicating with the
10 interior of the reservoir, and the outer wall of the applicator head including an outer coupler.

15 The collapsible reservoir can be made of any suitable material compatible with the cosmetic mass. Preferred materials are pliable, especially elastically-deformable materials such that the reservoir tends to spring back to its original shape, to provide a fine degree of regulation to the flow of the cosmetic mass on demand by the user's hand. In the alternative, inelastically-deformable materials, such as metal foils, can be used. Suitable materials include polypropylene, high density polyethylene (HDPE), and co-extruded polyethylene and ethylene vinyl alcohol (EVOH) polymer or oligomer.

20 A reservoir can be made by various processes, including the use of an extruded material and by injection molding. For example, a reservoir material can be formed into a cylinder (*e.g.*, by extrusion), and sealed at one end (*e.g.*, by heating and crimping) to form a tubular reservoir. Such a reservoir tube can be spin-welded, ultrasonic welded, or otherwise bonded to a neck, preferably before sealing. In
25 another method, a neck/reservoir combination can be injection molded as a single piece. Preferably, when the container is injection molded, the wall thickness will be greater than when extruded components are used. Polypropylene and HDPE are preferred for injection-molded reservoirs, and all three classes of materials (polypropylene, HDPE, and co-extruded polyethylene and EVOH) are preferred for
30 extruded reservoirs.

A tubular neck can also be made of any suitable material compatible with the cosmetic mass, and is preferably more rigid than the reservoir (e.g., via a greater wall thickness). For example, as described above, the neck can be injection molded with the reservoir as a single piece, using the same construction material.

5 Alternatively, the neck can include a first construction material, and the reservoir can include a second construction material, the two pieces being bonded together after formation such that the interior of the neck communicates with the interior of the reservoir for conveyance of the cosmetic mass.

The neck includes at least one a coupler. A coupler can include any 10 feature to substantially restrain movement of one element with respect to another in a direction of interest, for example by clamping, wedging, shrinking, force fit, sticking or pressing together, and penetration of one member into a hole in another. Couplers can include, without being limited to, beads (e.g., snap bead rings), clamps, claws, clips, keys, threads, and wedges. Claws (e.g., crab claws), clips, snap beads, and 15 threads are preferred. Couplers can restrain movement in one or more directions by means such as frictional and mechanical engagement, elastic deformation, and inelastic deformation. The provision of one or more couplers on the neck permits the use of various applicator heads for specific cosmetic applications. Provision of a suitable coupler can also permit the interchange of applicator heads for flexibility of 20 application of a cosmetic mass contained in a single reservoir.

In preferred embodiments wherein the applicator head is removably coupled to the neck, a coupler will substantially restrain movement of the neck with respect to the applicator head in the axial direction, such that the head will not be substantially pushed into or pulled out of the neck while in storage or use. In one 25 such embodiment, the coupler will also substantially restrain movement of the neck with respect to the applicator head in the radial direction, such that the applicator head does not rotate substantially with respect to the neck, although this need not be the case and, in other embodiments, such freedom of rotation will be preferred.

In embodiments wherein the applicator head is removably coupled to 30 the neck, the applicator head can be inserted into the neck or the neck can be inserted

into the head, preferably the former. Thus, in a preferred embodiment wherein the applicator head is inserted into the neck for coupling, the inner wall of the neck includes at least one, preferably two, inner couplers, the outer wall of the applicator head includes at least one, preferably two, outer couplers, the interior of the applicator head communicates with the interior of one or more of the neck and the reservoir, and the outer wall of the neck includes an outer coupler. Such an applicator/container combination optionally, but preferably, includes a cap removably engaged with the neck outer coupler.

In a preferred embodiment wherein the neck is inserted into the applicator head for coupling, the inner wall of the applicator head includes at least one, preferably two, inner couplers, the outer wall of the neck includes at least one, preferably two, outer couplers, the outer wall of the applicator head includes an outer coupler, and the interior of the applicator head communicates with the interior of one or more of the neck and the reservoir. Such an applicator/container combination optionally, but preferably, includes a cap removably engaged with the applicator head outer coupler.

Preferred applicator heads include a tip portion including one or more discharge openings and a plurality of fibers (e.g., bristles or flocking) disposed at the application end (e.g., the outer surface) of the tip, to aid in dispersing and applying the cosmetic mass. The applicator head preferably is rigid, and can be made from the same materials identified above for construction of containers. Suitable applicators heads are commercially available under the designations T1, T2, and T3, from Cosmolab, Inc., of Lewisburg, Tennessee, for example.

Any cosmetic mass having a viscosity suitable for dispensation via a tube can be loaded into a container disclosed herein and used in an applicator disclosed herein. Suitable cosmetics include eyeshadows, eyeliners, lip liners, and lip colors, and are known to those in the art and available for commercial purchase.

In an embodiment wherein the applicator head is joined to the reservoir (e.g., by bonding or integral formation), then preferably the applicator head includes a

rigid base portion adjacent the reservoir and the rigid base portion includes a coupler for engagement with a removable cap. Such an embodiment also preferably includes a tip portion including one or more discharge openings and a plurality of fibers (e.g., bristles or flocking) disposed at the application end (e.g., on the outer surface) of the tip.

5 The containers and tubes disclosed herein can also have various optional features, including features to promote, storage, handling, and use. Thus, a container or applicator will preferably include a removable cap. The optional removable cap preferably forms a water-tight seal, for use with cosmetic masses that are sensitive to changes in moisture, such as hydrophilic cosmetics. In another 10 embodiment, the reservoir wall includes a relatively rigid transition region in the vicinity of the neck adapted for grasping by a user, thereby preventing substantial deformation of the reservoir prior to removal of a cap, when present, and preparatory to application.

15 The containers and tubes disclosed herein facilitate smooth, controllable dispensation of a cosmetic mass. Known cosmetic applicators that use applicator heads with flocking or bristles have included a rigid, non-collapsible cylindrical reservoir for the cosmetic mass. A plunger was displaced within the cylinder to force cosmetic mass through the applicator head. The plunger was 20 mounted on a threaded shaft, which extended further into the cylinder by rotation through a similarly-threaded nut in fixed position. Rotation was permitted in only one direction, such that the plunger could only advance to force product out, and not retract. Rotation was effected by holding the rigid cylinder in one hand, while advancing the plunger to dispense cosmetic product by twisting an actuator on the end 25 of the applicator.

In contrast, the containers and tubes disclosed herein, by providing a 30 collapsible tube, can be used with a single hand to dispense product on an as-needed basis as the cosmetic product is applied to the user's (or the applicant's) skin. Furthermore, even finer control over dispensation is possible when the reservoir is made of a more elastically-deformable material.

The containers and tubes disclosed herein can be made by various methods, such as the bonding and injection-molding methods described above. A preferred method of making an applicator with a removably coupled applicator head includes the steps of: bonding a pliable-walled tube to a tubular neck, the inner wall of the neck including an inner coupler and the outer wall of the neck including an outer coupler; inserting a tubular applicator head into the neck, the outer wall of the applicator head including an outer coupler; supporting the neck against deformation while engaging the inner and outer couplers to connect the applicator head to the neck; loading a cosmetic mass into the pliable-walled tube; and sealing the pliable-walled tube.

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EXAMPLE

The following example is provided to illustrate the invention but is not intended to limit the scope of the invention.

Example 1

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Figures 1-3 illustrate a cosmetic applicator 10 for holding and applying a cosmetic mass. The applicator 10 includes a collapsible reservoir 12 including a generally tubular pliable wall 14 having a crimp seal 18 at one end. The reservoir 12 is in the form of a cylinder that has been deformed by crimping at one end. The applicator 10 also includes a tubular neck 20 joined to the reservoir 12, a tubular applicator head 22 disposed within the interior of the neck 20, and a cap 24 removably engaged with the neck 20. The interior of the neck 20 communicates with the interior of the reservoir 12.

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Figure 2 is a partial cross-sectional view of the applicator 10, as indicated in Figure 1, enlarged to show details. The neck 20 includes a first snap ring coupler 28 on its interior surface and a second snap ring coupler 30 on its exterior surface. The applicator head 22 includes a snap ring coupler 32 on its exterior surface for engagement with the coupler 28 on the interior of the neck 20. The cap 24 includes a snap ring coupler 34 on its interior surface for engagement with the coupler 30 on the exterior of the neck 20.

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Figure 3 is a partial exploded view of the applicator 10, showing the cap 24, the applicator head 22, the neck 20, and a partial view of the reservoir 12. The applicator head 22 includes a rigid, hollow section 40 for insertion into the neck 20, and a raised shoulder 42 to prevent over-insertion (see Figure 3). The tip 44 of the applicator head 22 of this embodiment is flocked (*i.e.*, includes a plurality of fibers on the surface), and the tip 44 includes a hole 48 for dispensation of cosmetic mass when the reservoir 12 is squeezed.

The foregoing description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, as modifications within the scope of the invention may be apparent to those having ordinary skill in the art.